

Application No. 10/604,709
Amendment dated June 25, 2005
Reply to Office action of May 17, 2005

Amendment to the claims:

This listing of claims will replace the listing in prior version.

Claim Listing:

Claims 1 (currently amended): A method to simulate an outdoor scene visible window with changeable window covering styles and controllable window covering operation for a windowless room comprising the steps of: analyzing structure of outdoor windows of at least two different styles for storing window data representing said outdoor windows in a memory device, said data is characterized by window parameters, which include enumerated values of, but not limited to grid numbers, color of frame, frame styles and sizes of said outdoor windows; user controllable construction/reconstruction of fixed window image of chosen outdoor window from said window parameters stored in said memory device; analyzing structure of window coverings of at least two different types/styles for storing window covering data representing said window coverings in said memory device, said window covering data is characterized by pleat image tokens together with end pleat position(s) representing window covering opened at various pleat covering ratios, or by leaf image tokens representing leaves at various openness angles together with various end leaf positions(s) representing various leaf covering ratios, and by window covering parameters, which include numerated values of, but not limited to types, styles, colors, sizes, pleat numbers and leaf numbers of said window coverings; user controllable construction/reconstruction of window covering image for chosen window covering opened with user's desired covering ratio from said window covering data stored in said memory device; superimposing said window covering image on said fixed window image to form a static image; receiving a sequence of outdoor images from a source; creating a window covering image which is a simulation of a window covering at a certain openness and position of user's preferences; creating a fixed window image which is a simulation of a real window with window structure includes window edges and window grid; superimposing said curtain image on said fixed window image to form a static image; detecting new position of human motion of a person closest to a motion detector; creating a sequence of segmented outdoor scene images by remotely orientating a controllable motor-driven video camera at location of interest according to human motion detected by said motion detector, or creating said sequence of segmented outdoor scene images by segmenting each frame of available outdoor scene images from any source based on said new position of human motion; combining each current frame of said sequence of partial outdoor images with said static image to form an sequence of instant simulation image images; said instant simulation image is a simulation of the look of a real window with said window covering opened at a certain position and a openness of user's preferences; updating said instant simulation image at a frequency of designer's choice; updating said instant simulation image when either said openness or said position of said window covering image is changed; and displaying said sequence of instant simulation images on a flat monitor mounting on a wall; and updating said sequence of instant simulation images in response to change in said partial outdoor images as a consequence of the human movement detected by said motion detector.

Claims 2 (currently amended): The window covering in claim 1 include shades, blinds, different styles of curtains method according to claim 1, wherein said window coverings are classified into: leaf window coverings characterized as having leaves, wherein the controlling operation changes the openness angles of leaves and end leaf position(s), said leaf window coverings include, but not limited to horizontal blinds, vertical blinds; and pleat window coverings characterized as having pleats, but no leaves, wherein the controlling operation expands/retreats all pleats and moves end pleat(s) to new position(s), said pleat window coverings include, but not limited to shades, curtains of different styles, valance and drape combinations combination and window panels;

Claims 3 (currently amended): A memory storage to store information about various window coverings and window structure described in claim 1 in terms of parameter values The method according to claim 1, wherein said motion detector, mounted on the rim of said flat monitor or a location on the wall which is close to said flat monitor, for detecting human position and movement in front of said flat monitor.

Claims 4 (currently amended): A The method according to claim 1, wherein A video signal receiver for receiving the sequence of outdoor images described in claim 1; said sequence of outdoor images comes from sources include transmitted signal by the wire from an outdoor video camera, the broadcast signal from wireless video cameras through video transmitters, and wired or wireless signal from a computer wherein said sequence of outdoor images is available through any means; said creating a sequence of segmented outdoor scene images by remotely orientating a controllable motor-driven video camera further comprising the steps of: receiving a sequence of outdoor scene images by facing said controllable motor-driven video camera at a preset default direction; changing direction of sight of said controllable motor-driven video camera based on the sideward movement of a viewer in front of said flat monitor detected by said motion detector; and changing the zoom of said controllable motor-driven video camera based on the distance between a viewer to said flat monitor detected by said motion detector.

Claims 5 (currently amended): The method according to claim 1, wherein an image processor for creating the instant simulation image described in claim 1, coupled to said memory device, is used as a device for creating and reconstruction of: fixed window image; said window covering image; said static image; said sequence of segmented outdoor scene images; and said sequence of instant simulation images.

Claims 6 (currently amended): Means to retrieve the information from a memory storage described in claim 3 for displaying a plurality of types, styles and colors of said window coverings and a plurality of types of said window structures in a table, wherein a preferred type, style, color of said window covering and said window structure can be chosen The method according to claim 5, wherein changes in said fixed window image, said window covering image, said static image and said sequence of segmented outdoor scene images cause reconstruction of said sequence of instant simulation images.

Claims 7 (currently amended): A The method according to claim 5, wherein a first user interface device, coupled to the image processor of claim 5, is used as means for interactively causes said image processor to draw new said instant simulation image wherein reflects new position of the simulated window covering changed by the user selecting/reselecting of the window of user's preference from said window data, causing construction or reconstruction of said fixed window image and for interactively selecting/reselecting of the window covering of

user's preference from said window covering data, causing construction or reconstruction of said window covering image.

Claims 8 (currently amended): ~~An~~ The method according to claim 5, wherein a second user interface device, coupled to the image processor of claim 5, interactively causes said image processor to draw new said instant simulation image wherein reflects new openness of the simulated window covering changed by the user is used as means for: changing interactively for new openness angle of leaves of window covering in display, consequently forcing reconstruction of new sequence of instant simulation images; moving interactively the end leaf position(s) or end pleat position(s) for different covering ratio of window covering in display, consequently forcing reconstruction of new sequence of instant simulation images.

Claims 9-13 (cancelled)

Claim 14 (currently amended): ~~An outdoor window simulation system for carrying out the method to simulate~~ simulating an outdoor scene visible window with changeable window covering styles and controllable window covering operation for a windowless room comprising: a memory storage to store information about various types window structures, various types, styles and colors of window coverings, an I/O interface displaying a table of information about available choices of type window structures and types, styles and colors of window coverings; a video signal receiver to receive image sequence of outdoor scene; an image processing unit to create the instant simulation image; a display unit mountable on the wall and preferably flat in viewing surface for displaying instant simulation image; a device controller for adjusting the openness of the simulated window covering on the screen and sending a image redraw request to said image processing unit for updating the instant simulation image; a device controller for adjusting the position of the window covering on the screen and sending a image redraw request to said image processing unit for updating the instant simulation image; and a switch device coupled to said display monitor for choosing application mode from available modes of applications; a video signal receiver for receiving a sequence of outdoor scene images; a memory device for storing window structure information of at least two different types and window covering information of at least two different types; a first user interface device for selection of window type/style and window covering type/style of user's choice from said memory device; a second user interface device for the operation of moving end leaf position(s) or end pleat position(s); a third user interface device for the operation of changing leaf openness angle(s); a motion detector for detecting new position of a person closest to said motion detector; a remotely controllable motor-driven video camera responding to human motion signal for changing zoom and camera aiming direction, or a software program performing digital zoom for each frame of said sequence of outdoor scene images according to human motion detected by said motion detector; an image processing unit, coupled to said video signal receiver, said first user interface, said second user interface and said third user interface and said motion detector for construction/reconstruction of sequence of instant simulation images; one or more flat display monitors mountable on the wall for displaying said sequence of instant simulation images; and a switch device coupled to said flat display monitor for selecting other modes of non-simulation applications as television display, computer monitor, DVD display monitor, or any combination thereof.

Claim 15 (cancelled)

Claim 16 (currently amended): ~~An~~ The outdoor window simulation system according to claim 14, wherein said flat display monitor includes monitor equipped with control circuit to receive and display television programs ~~monitors include monitors equipped with TV tuner and control circuit to receive and display television programs.~~

Claim 17 (cancelled)

Claim 18 (new): An outdoor window simulation apparatus comprising: one or more flat display monitors mountable on the wall for displaying sequence of segmented outdoor scene images; a motor driven window covering mounted on the wall for covering said flat display monitors; a control mechanism for controlling operations of said motor driven window covering; a video signal receiver for receiving sequence of outdoor scene images from outdoor location of interest; a motion detector detecting new position of a person closest to said flat monitors; a remotely controllable motor-driven video camera responding to human motion for changing zoom and camera aiming direction, or a software program performing digital zoom for each frame of said sequence of outdoor scene images according to human motion detected by said motion detector; an image processing unit for segmenting each frame of said sequence of outdoor scene images based on said new position of human motion into said sequence of segmented outdoor scene images; and a device controller for controlling the operation of said flat display monitor, coupled to said control mechanism, simultaneously controlling the operations of said flat display monitor and window covering in a synchronized manner.